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AIRCRAFT OPERATING and SUPPORT COST DEVELOPMENT GUIDE

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Office of the Secretary of Defense
Cost Analysis Improvement Group

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PREFACE

This guide was prepared by the Office of the Secretary of Defense, Cost Analysis Improvement Group (CAIG) for use by Service and CAIG analysts in preparing aircraft system operating and support (O&S) cost estimates. It updates and expands the May 1974 Aircraft Guide and the cost structures published in August 1977.

The information provided in this guide should be used for O&S cost estimates of fixed and rotary wing aircraft submitted for DSARC review. Specific questions concerning this guide or cost estimation procedures should be addressed to OASD(PA&E)RA, Rm 2D278, Pentagon, Washington, D.C. 20301, or telephone (202) 697-4311.

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TABLES

ABBREVIATIONS

BOS	-	Base Operating Support
C&EA	-	Cost and Economic Analysis
CAIG	-	Cost Analysis Improvement Group
CES	-	Cost Element Structure
DSARC	-	Defense Systems Acquisition Review Council
DoD	-	Department of Defense
EPA	-	Extended Planning Annex
F&FP	-	Force and Financial Plan
FYDP	-	Five Year Defense Program
JCS	-	Joint Chiefs of Staff
O&S	-	Operating and Support
OASD	-	Office of Assistant Secretary of Defense
OSD	-	Office of Secretary of Defense
PA&E	-	Program Analysis and Evaluation
POL	-	Petroleum, Oil, and Lubricants
POM	-	Program Objective Memorandum
PPBS	-	Planning, Programming, Budgeting System
RA	-	Resource Analysis
ROTC	-	Reserve Officer Training Corps
RPM	-	Real Property Maintenance
SE	-	Support Equipment
TAD	-	Temporary Additional Duty
UPT	-	Undergraduate Pilot Training
WRM	-	War Reserve Materiel

AIRCRAFT OPERATING AND SUPPORT COST DEVELOPMENT GUIDE

1.0 INTRODUCTION.

1.1 PURPOSE. This document provides guidelines for preparing and presenting estimates of operating and support (O&S) costs to the OSD Cost Analysis Improvement Group (CAIG) and the Defense Systems Acquisition Review Council (DSARC). These guidelines are intended to achieve consistent and effective preparation and documentation of major system O&S cost estimates. This guide updates and expands the CAIG "Cost Development Guide for Aircraft Systems" originally published in May 1974.

1.2 AUTHORITY. The foundation for development and review of life cycle cost estimates within the DSARC process is described in DoDD 5000.1 "Acquisition of Major Defense Systems", and DoDD 5000.4, "OSD Cost Analysis Improvement Group". Specifically, DoDD 5000.4 directs the CAIG to:

- Establish criteria, standards, and procedures concerning the preparation of cost estimates to the DSARC and CAIG;
- Develop useful methods of formulating cost uncertainty/cost risk information for DSARC review; and
- Work with DoD components to determine relevant costs for DSARC consideration and to develop techniques for identifying and projecting these costs.

1.3 APPLICABILITY. This guidance applies to aircraft acquisition programs reviewed by the DSARC. It is primarily aimed at developing the cost of force units having a single primary weapon system (e.g., a squadron of F-16, F-18, etc.). It is generally applicable to any O&S cost analysis performed during the acquisition process, including cost effectiveness and trade studies. This guidance is directed at costs used in acquisition program decisions which are not necessarily the same as total program or budget costs. They are designed to allow the cost analyst freedom in selecting cost estimating techniques and models, while also satisfying standard conventions.

2.0 O&S COST PERSPECTIVE.

2.1 MAJOR COST CATEGORIES. The major life cycle cost categories for a system are listed in Table 1. This guide addresses only the O&S category.

LIFE CYCLE COST
RESEARCH AND DEVELOPMENT
PROCUREMENT
OPERATING AND SUPPORT
DISPOSAL

Table 1. Major Life Cycle Cost Categories

2.2 RELEVANT COSTS. This guide centers on the major system acquisition programs reviewed by the DSARC. Accordingly, the relevant costs are those that can be affected by OSD and Military Department actions during the DSARC process. The objective is to specify all relevant O&S costs to the government regardless of how such costs are funded.

2.3 THE NORMATIVE APPROACH. O&S cost estimates presented to the DSARC should focus on the costs likely to be incurred by a system under specified conditions. They are not designed to estimate future budget expenditures directly. The difference is important. A budget estimate may contain other costs not affected by the DSARC decision, such as, distribution of fixed overhead. The normative approach used here attempts only to estimate the future resource requirements, given certain assumptions about the characteristics of the aircraft, the tactical doctrine for deployment, the support policies, the intensity of operations, etc.

The normative approach requires more than a projection of historical cost trends. It should provide a logical link between the assumptions about the aircraft, specified conditions, and the resulting cost estimate. These cause and effect relationships are crucial. If an assumption is changed, either the cost estimate should change, or the lack of change should be explained.

2.4 RELATIONSHIP TO PLANNING, PROGRAMMING, AND BUDGETING. Cost estimates used in the planning, programming, and budgeting process address the total cost to operate the DoD. On the other hand the cost analysis described in this guide pertains only to those portions of total costs that are affected by an acquisition program. Thus the estimated O&S costs may not be the same as programming or budgeting costs. However, many of the cost elements from these O&S cost analyses should be compatible with approved Program, Planning, and Budgeting System (PPBS) costs,

and can be used to derive the impact of alternative aircraft choices on programs and budgets.

3.0 ANALYSIS TASKS.

3.1 DEFINING THE PERTINENT ISSUES. Each acquisition program is likely to entail special cost issues and problems. The analyses and presentations for the DSARC should be tailored to deal effectively with them. A recommended method to insure all pertinent issues are identified is through pre-DSARC meetings between representatives of the CAIG and the affected DoD component. These pre-DSARC discussions may cover:

- Description of the proposed system;
- Description of an existing reference system;
- Specification of alternatives;
- Identification of historically relevant O&S cost drivers for the proposed system, and actions planned to reduce them;
- Identification of the unique properties of the proposed system that could affect O&S requirements;
- Specification of content and ground rules for the cost evaluation and its presentation, including determination of costs to be included; and
- Specification of significant trade-off issues to be quantified and presented.

3.2 IDENTIFYING THE REFERENCE SYSTEM. To provide the required contemporary baseline against which to compare the cost of a proposed system, a reference system should be identified. A reference system is an existing operational system with a mission similar or analogous to that of the proposed aircraft. Usually, the aircraft being replaced is the reference system, unless another exists that provides a better point of reference for the cost analysis.

The normative approach is also applied to the reference system. The assumptions and cost-estimating methods for both the reference and proposed systems should be as similar as possible. Differences in conditions (e.g., level of support, operating intensity, manning policies, etc.), should not obscure differences in aircraft characteristics affecting resource needs.

3.3 DEFINING SYSTEM GROUND RULES. A prerequisite to the development of useful O&S cost estimates is a detailed definition of how the system will be used and support in peace or war. For aircraft this definition

should include missions, characteristics, and manning; and maintenance support and acquisition policies. The documented ground rules should furnish the information needed to allow proper interpretation of the cost estimates. These ground rules should be assembled for convenient reference and included as part of the estimate documentation. The ground rules used for determining non-O&S cost elements, such as initial spares, support equipment, and war reserve materiel, should be compatible with O&S cost ground rules.

3.4 SELECTING THE RELEVANT COSTS. A cost element structure (CES) establishes a standard vocabulary for identifying and classifying the costs of a system. The recommended O&S cost structure is discussed in Section 5. A check should be made to determine if all the relevant costs are included.

The cost structure discussed in Section 5 is intended to reasonably cover the O&S costs for the DSARC. However, some analyses may introduce circumstances in which additional costs may also be relevant. For example, collateral costs for such activities as base openings or aerial refueling could be pertinent to some aircraft acquisition programs. If a decision will affect costs not explicitly described in this guide, such costs should be identified, estimated, and included in the cost analysis.

3.5 CONSTRUCTING THE COST MODEL. Specific models or techniques for calculating O&S cost are not prescribed in this guide. There are several acceptable ways of generating O&S cost estimates and no one approach is best for all situations. In general, the context of the problem determines the estimating process. Context includes the phase of the acquisition program, the decision to be made, and the accuracy and resolution required in the estimate. A good model will have the following characteristics:

- Consistency in the Cost Structure. The basic cost structure should not change as the program progresses through the various milestones. However, the basic elements and their subelements will be divided into levels of greater detail. For this reason, the cost structure provided in this guide is hierarchical, e.g., the sum of each set of lower indenture elements equals the next higher indentured element. In this manner, the cost structure allows flexibility in selection of the level and method by which an element is estimated.

- Flexibility in Estimating Techniques. The model should allow the element estimating techniques to vary as the program progresses through the phases of acquisition. For example, at Milestone I, it may only be possible to estimate total depot maintenance cost using a cost estimating relationship (CER). However, at Milestone III, total depot maintenance should be the sum of the next lower indentures; i.e. airframe, engine overhaul, component repair, etc. Some of these elements may be

developed by engineering analysis and others by CERs. Generally by Milestone III, design sensitive parameters will need to be developed by engineering analysis in order to address the issues normally raised at the DSARC review.

- Simplicity. Complexity is not a desirable trait in a O&S cost model. Often the cost, labor hours, and schedule required to set up and provide data for a complex model prohibits its effective and timely use in the decision process. The model should be structured so that it is useful in the early phases of the acquisition program and can evolve to accommodate more information as the program continues through the acquisition phases.

- Usefulness to the Design Process. While the estimation of costs for DSARC review is an important function, the applicability of the model to day-to-day program office and contractor decision processes is equally important. Feedback to the design, operational, and support decision processes is the best way to minimize life cycle cost.

3.6 ESTIMATING AND EVALUATING RELEVANT COSTS. The analysis of O&S costs during the DSARC review is vital to the selection, improvement, and control of design, development, and support concepts for the proposed system. The purposes of the O&S cost analysis are: first, to explore and quantify the relative advantages of different concepts and design options (for example, the comparison of new and old systems, alternative support policies, etc.), and, second, to provide a means of estimating the impact of O&S costs upon affordability and force structure planning (e.g., the F&FP, POM, FYDP, and EPA processes). A fundamental consideration for the DSARC process is that the proposed aircraft system satisfy its mission requirements at the lowest total life cycle cost.

3.7 TREATING UNCERTAINTY. Estimates of future aircraft O&S costs are beset by uncertainties from many sources. It is therefore useful to perform sensitivity analyses and to estimate a range that shows the magnitude of the uncertainty. When a range is used, the documentation should explain the method used to establish the bounds of the range. When quantification of uncertainty proves impractical, a qualitative assessment of the estimate should be made.

The DSARC should also be shown the major risks of the acquisition program, their likely impact on O&S costs, and feasible alternatives for reducing them. For example, an O&S cost estimate is frequently sensitive to the goals established for reliability and maintainability of the aircraft and selected critical subsystems. If the fulfillment of these goals appears doubtful during the development phase, the cost impact of poorer reliability and maintainability should be investigated, and, if significant, presented to the DSARC.

4.0 MAJOR CONVENTIONS.

4.1 INTRODUCTION. This section discusses some of the conventions to be used in developing and presenting O&S costs to the DSARC. Deviations should be coordinated with the CAIG.

4.2 COST ESTIMATE COVERAGE. Multiple cost estimates may be required for a single aircraft, a force unit (e.g., squadron), and the total force. In most cases, the choice will be annual cost for a discrete unit and total force life cycle cost.

4.2.1 Annual Force Unit Costs. A typical unit, either real or hypothetical, should be chosen to represent the cost impact of deployment of the aircraft. For the purposes of this analysis, mature system conditions may be assumed.

4.2.2 Force Life Cycle Costs. Decisions on affordability must be based on the total force with costs time-phased over the expected life of the system. The analysis should consider such items as the phase-in of the system to the active and reserve forces, contractor support in the early years, and reliability/maintainability growth, as appropriate.

4.3 WAR/PEACE CONDITIONS. The O&S cost estimates should be based on expected peacetime deployments and activities. The scenario that best reflects the expected utilization and support of the proposed aircraft and generates the most likely O&S resource requirements should be used. It should be noted that while peacetime activity rates may be assumed, some cost elements are maintained during peacetime to meet wartime requirements. Two such elements are personnel and support equipment.

4.4 O&S PERIOD. The O&S cost analysis should extend over the expected useful life of the system. Generally, this span will include the force buildup plus 10 years of operation for fighter aircraft and 15 years for cargo type aircraft. This value should be pre-coordinated with the CAIG.

4.5 TYPE OF DOLLARS. O&S costs should be presented in constant dollars of the current fiscal year. Traceability of these costs to the base year of the program should be maintained. Sensitivity of estimates to discounting and escalating cost streams should be presented separately.

4.6 MATURE SYSTEM ASSUMPTIONS. The O&S characteristics of a system change throughout its lifetime. When estimating typical annual O&S costs (i.e., a snapshot of one year's O&S costs), a mature aircraft should be assumed. The characteristics of the mature sysem are those most likely to occur during operational use and may not be the same as the design goals.

When developing a time-phased estimate, the expected rate of maturity should be considered, as well as the rate at which new aircraft will be added to the force. Different rates of maturity are particularly significant when comparing alternatives that differ markedly in their use of common subsystems, in the efforts devoted to finding and correcting design or support weaknesses, in the support strategies for the early years of system deployment, and in the rates at which operating experience is gained.

4.7 SIGNIFICANT COST ELEMENTS. Not all of the cost elements require or deserve the same attention. The greatest analytic effort should be devoted to those accounting for a substantial part of the total O&S costs, those that can be affected by acquisition program decisions, or those that assist in distinguishing between alternatives. For example, the significant O&S cost elements are normally unit mission personnel, aviation POL, and depot maintenance.

Cost elements not pertinent to distinguishing between alternatives can be addressed in a straight-forward manner with planning factors. For example, base operating support (BOS) is included in the structure to provide the DSARC with the full O&S costs of operating the system. However, BOS costs are usually more a function of the military department's doctrine than system characteristics.

4.8 EXCLUDED COSTS.

4.8.1 Research and Development. This category covers all R&D costs, including: those incurred in developing the production design of the new system, components and support equipment; and costs associated with the development and test of the new system (including prototype and test vehicle costs) through the end of the acquisition process.

4.8.2 Procurement. All procurement costs are excluded except for the following: replenishment spares, recurring modification and modification spares, replacement support equipment and spares, training missiles and munitions and other procurement cost that are incurred as a direct result of operating the new system.

4.8.3 Base Headquarters and Services. This category includes costs of personnel and materiel primarily dependent on the existence of the base; they are independent of the type and number of aircraft unit located there. These costs pertain to:

- Maintenance and protection of base facilities, road repair, fire and police protection, trash disposal, and utility services;
- Maintenance of base living conditions, commissaries, exchanges, religious activities, and entertainment facilities; and
- Supervision of the above activities.

4.8.4 Central Support Overhead. The pay of personnel assigned to headquarters organizations that administer the operation of depot maintenance, support depots, recruiting, aircrew and technical training, and the upkeep cost of these headquarters are excluded from the O&S cost estimate. For example, these activities include Army Materiel Development and Readiness Command, Air Force Logistics Command, Naval Materiel Command, and fixed overhead at the Service depot repair facilities.

4.8.5 Command Structure Overhead. The pay of personnel assigned to operating headquarters and staffs at and above the level of numbered Army, Air Force Air Division, Naval Air Wing, and Fleet Marine Force, and the upkeep cost of these headquaters are excluded from the O&S cost estimate. Collectively, these headquarters supervise the operation of the combat units and provide overall policy formulation and administration of the entire Service.

4.8.6 Disposal. System disposal costs at the end of useful life are excluded from O&S costs. They should be shown under the life cycle cost category of Disposal, as shown in Table 1.

5.0 O&S COST ELEMENT STRUCTURE.

5.1 INTRODUCTION. In order to establish consistency in the computation and display of costs, the desired cost estimating structure for aircraft O&S costs is shown in Table 2. Definitions and further breakdowns of these elements are provided in this section. This structure is designed specifically for the DSARC's decision needs when reviewing aircraft acquisition programs, and not necessarily for budgetary analysis.

The structure reflects those costs associated with a discrete force unit. The higher levels of the structure should be estimated and presented at Milestone I and the lower indentures estimated and presented as better program definition and estimating techniques permit.

5.2 UNIT MISSION PERSONNEL. Table 3 is a further breakdown of unit mission personnel by officer, enlisted, and civilian. Both cost and non-cost (number of people) estimates should be presented on these elements.

5.2.1 Aircrew. The cost of pay and allowances for the full complement of crews required to operate the aircraft of a discrete unit. It includes the aircrews necessary to meet combat readiness, training, and administrative requirements such as leave, sickness, TDY, etc. This element is further divided into pilot and non-pilot officers, and enlisted personnel.

5.2.2 Maintenance. The pay and allowances for personnel performing maintenance and general ordnance, support of assigned aircraft, ordnance, support equipment and unit level training devices.

OPERATING AND SUPPORT COST

- UNIT MISSION PERSONNEL
  - Aircrew
    - Military
  - Maintenance
    - Military
    - Civilian
  - Other Unit Personnel
    - Military
    - Civilian
- UNIT LEVEL CONSUMPTION
  - Petroleum, Oil & Lubricants
  - Maintenance Materiel
  - Training Ordnance
- DEPOT LEVEL MAINTENANCE
  - Airframe Rework
  - Engine Rework
  - Component Repair
  - Support Equipment
  - Software
  - Modifications
  - Other Depot
  - Contracted Unit Level Support
- SUSTAINING INVESTMENT
  - Replenishment Spares
  - Replacement Support Equipment
  - Modification Kits
  - Other Recurring Investment
- INSTALLATION SUPPORT PERSONNEL
  - Base Operating Support
    - Military
    - Civilian
  - Real Property Maintenance
    - Military
    - Civilian
  - Medical
    - Military
    - Civilian
- INDIRECT PERSONNEL SUPPORT
  - Misc Operations and Maintenance
  - Medical O&M Non-Pay
  - Permanent Change of Station
  - Temporary Additional Duty Pay
- DEPOT NON-MAINTENANCE
  - General Depot Support
  - Second Dest Transportation
- PERSONNEL ACQUISITION & TRAINING
  - Acquisition
  - Individual Training

Table 2. Operating and Support Cost Elements

Unit Mission Personnel

- Aircrew
  - Officer-Pilot
  - Officer-Nonpilot
  - Enlisted
- Maintenance
  - Organizational
    - Officer
    - Enlisted
    - Civilian
  - Intermediate
    - Officer
    - Enlisted
    - Civilian
  - Ordnance
    - Officer
    - Enlisted
    - Civilian
  - Other Maintenance Personnel
    - Officer
    - Enlisted
    - Civilian
- Other Unit Personnel
  - Unit Staff
    - Officer
    - Enlisted
    - Civilian
  - Security
    - Officer
    - Enlisted
    - Civilian
  - Remaining Unit Personnel
    - Officer
    - Enlisted
    - Civilian

Table 3. Unit Mission Personnel Elements

5.2.2.1 Organizational Aircraft. The pay and allowances for personnel performing on-equipment maintenance.

5.2.2.2 Intermediate Aircraft. The pay and allowances for personnel performing off-equipment maintenance.

5.2.2.3 Ordnance Maintenance. The pay and allowances for personnel performing maintenance and service functions for munitions, missiles and related systems. Also includes personnel needed for loading, unloading, arming, and dearming of squadron munitions; inspecting, testing, and maintaining of aircraft weapons, release systems, maintenance, ammunition loading, activation and deactivation of aircraft gun systems, and maintenance and handling of the munitions stockpile authorized by the war reserve materiel plan.

5.2.2.4 Other Maintenance Personnel. The pay and allowances for aircraft and ordnance maintenance personnel not covered above. Includes the cost of personnel assigned to support equipment maintenance, simulator maintenance, and Chief of Maintenance functions, as related to the discrete unit.

5.2.3 Other Unit Personnel.

5.2.3.1 Unit Staff. The pay and allowances for personnel required for unit (squadron) command, flying supervision, operations control, planning, scheduling, flight safety, aircrew quality control, and unit administration.

5.2.3.2 Security. The pay and allowances for system security personnel, including security forces and related administrative personnel. Duties performed include entry control, close and distant boundary support, and security alert teams.

5.2.3.3 Remaining Unit Personnel. The pay and allowances for other personnel assigned to deployed units. It includes higher than unit (squadron) staff personnel, such as public information, logistic, ground safety, and special mission personnel (e.g., photo developing and interpreting personnel for reconnaisance units).

5.3 UNIT LEVEL CONSUMPTION.

5.3.1 POL. The cost of aviation petroleum, oil, and lubricants (POL) required for peacetime unit flying operations. It includes consumption in-flight and on the ground, plus allowance for distribution, storage, evaporation, and spillage.

5.3.2 Maintenance Materiel. The cost of expense materiel used in unit level maintenance. This includes non-reparable or reparable items that are not centrally managed with individual item reporting. Excludes reparables procured from the stock fund which are included in cost elements for replenishment spares.

5.3.3 Training Ordnance. The cost of replacing or increasing stocks of ordnance expended by the operating unit during peacetime flying operations for the purpose of sustaining aircrew proficiency in delivery techniques. Includes such items as live and inert ammunition, bombs, rockets, missiles, and sonobuoys. Excludes JCS funded exercises and missiles fired primarily for reasons other than aircrew proficiency.

5.4 DEPOT LEVEL MAINTENANCE. The cost of personnel, materiel, and/or contractual services required to perform maintenance or modification of aircraft, components, and support equipment maintenance at DoD centralized repair depots and contractor repair facilities. Table 4 lists the depot maintenance cost elements.

Each of the elements discussed below may be further subdivided into labor and material. When commercial depot activities are a significant cost in the estimate, they should be identified and their costs distinguished from government depot activities.

Depot Level Maintenance
Airframe Rework
Labor
Materiel
Engine Rework
Labor
Materiel
Component Repair
Labor
Materiel
Support Equipment
Labor
Materiel
Software
Labor
Materiel
Modifications
Labor
Materiel
Other Depot
Labor
Materiel
Contracted Unit Level Support

Table 4. Depot Level Maintenance Elements

5.4.1 Airframe Rework. The cost of personnel, materiel and contractual services performed on aircraft returned to a centralized depot facility. It includes programmed depot maintenance, analytic condition inspections, depot drop-in maintenance, etc.

5.4.2 Engine Rework. The cost of personnel, materiel, and contractual services performed on engines, engine modules, and components at centralized depot facilities.

5.4.3 Component Repair. The cost of personnel, materiel, and contractual services performed on reparable items returned to a centralized depot facility.

5.4.4 Support Equipment. The cost of personnel, materiel, and contractual services performed on common and peculiar support equipment and training equipment returned to a centralized depot facility.

5.4.5 Software. The cost of maintaining system software for aircraft, support equipment and training equipment.

5.4.6 Modifications. The cost of personnel and contractual support for depot level installation of system modifications. The cost of materiel is included under sustaining investments.

5.4.7 Other Depot. The cost of personnel, materiel and contractual support required on other system items at centralized depot facilities.

5.4.8 Contracted Unit Level Support. The cost of contractual support provided directly to unit maintenance. It includes interim contractor support funded by O&M appropriations.

5.5 SUSTAINING INVESTMENTS. The cost of procuring spares, modification kits and materiel, and support equipment needed to sustain deployed unit peacetime operations exclusive of WRM costs.

5.5.1 Replenishment Spares. The cost of replenishing the inventory of aircraft assemblies, spares, and repair parts that are normally repaired and returned to stock. These items are primarly procured to replace losses due to condemnations. In addition, this cost may include procurement of stock levels that are not provided by initial spares procurement. Estimates of replenishment and initial spares should be developed together. A clear distinction should be maintained between items procured to achieve a required stock level versus items procured to maintain a required stock level, and the type of dollars used, i.e., replenishment or initial spares money.

5.5.2 Replacement Support Equipment and Spares. The cost of replenishing the inventory of support equipment that is needed to operate or support aircraft, aircraft subsystems, and other support equipment. This includes replacements for support equipment funded under the Peculiar Support portion of Aircraft Procurement (if the aircraft is still

in production) and under Common Support (if the aircraft is out of production or the support equipment is common to more than one type of aircraft). Initial support equipment funded as either Common Support Equipment or Peculiar Support Equipment is excluded.

5.5.3 Modification Kits. The cost of modification kits and modification initial spares for aircraft, support equipment, and training equipment. The modifications included are those needed to achieve acceptable safety levels, overcome mission capability deficiencies, improve reliability, or reduce maintenance costs. Excluded are modifications that are undertaken to provide operational capability not called for in original design or performance specifications.

5.5.4 Other Recurring Investment. The cost of recurring investments not included in the above categories.

5.6 INSTALLATION SUPPORT PERSONNEL. The following three elements consist of those personnel not directly assigned to the unit, but are required for the unit to perform its mission in peacetime. Normally these people are assigned to the host organization at the installation and would not be required if the unit were moved elsewhere. Table 5 lists these cost elements. Both cost and non-cost (number of people) estimates should be presented on these elements.

Installation Support Personnel
Base Operating Support
Officer
Enlisted
Civilian
Real Property Management
Officer
Enlisted
Civilian
Medical
Officer
Enlisted
Civilian

Table 5. Installation Support Personnel Elements

5.6.1 Base Operating Support (BOS). The cost of personnel supporting the operation of the installation and the tenant organizations stationed there. These personnel are primarily involved in the functions of communications, supply, services, security police (excluding system

security), and transportation. It also includes a portion of higher headquarters not charged to mission elements, such as accounting, finance, personnel, etc. Higher headquarters commander and operations staff are excluded.

5.6.2 Real Property Maintenance (RPM). The cost of personnel assigned to the maintenance and operation of real property facilities and related management and engineering support work and services.

5.6.3 Medical. The cost of medical personnel needed to support the unit at its peacetime location.

5.7 INDIRECT PERSONNEL SUPPORT.

5.7.1 Miscellaneous Operations and Maintenance. Miscellaneous unit and personnel costs not accounted for by other cost elements. These costs are funded under the O&M appropriation. Included are the costs of TDY travel, utilities, purchased services, miscellaneous supplies and equipment. Also included is the cost of miscellaneous medical supply support for all personnel.

5.7.2 Permanent Change of Station. The cost of permanent change of station moves for primary program element, BOS, and medical personnel.

5.7.3 Temporary Additional Duty Pay. Includes the cost of unit temporary additional duty (TAD) pay. This is primarily a Navy related cost.

5.8 DEPOT NON-MAINTENANCE. The cost of personnel and materiel involved in non-maintenance functions at the depot level. With the exception of second destination transportation, these costs are aggregated into the category of General Depot Support. Contract costs for these functions are also included.

5.8.1 General Depot Support. The cost of personnel and materiel supporting the depot level functions of supply, inventory control point, procurement, logistic support, and maintenance support. Following is a description of included costs for each area. However, a cost analysis does not need to provide visibility into each area.

- The cost of personnel and materiel needed to manage the procurement of supplies, spares, and repair parts and maintain control and accountablility of these assets. This element also includes contractor logistic management support costs for the appropriate aircraft systems.

- The cost of personnel and materiel needed to fill requisitions for supplies, spares, and repair parts. Included are the cost of receiving, unpacking, storage, inspection, packing, and crating.

- The cost of depot level sustaining or service engineering required for continued safe system operation.

- The cost of maintaining, updating, publishing, and distributing publications and technical orders necessary to operate and maintain the system.

5.8.2 Second Destination Transportation. The round-trip cost of transporting engines and engine components, ground support equipment and reparable secondary items to depot maintenance facilities and back to the operational unit or stock points, and the one-way cost of transporting repair parts from stock points to depot and below depot maintenance activities.

5.9 PERSONNEL ACQUISITION AND TRAINING. The recurring cost to acquire and train officer and enlisted personnel to support the unit. Table 6 lists these cost elements.

5.9.1 Personnel Acquisition. The cost to acquire officer and enlisted personnel. Includes costs for recruiting, basic training, ROTC, and academy, as appropriate.

5.9.2 Specialty Training. The cost of undergraduate pilot training, other non-pilot aircrew training, and non-aircrew officer and enlisted specialty training.

Personnel Acquisition and Training
Acquisition
Officer
Enlisted
Individual Training
Undergraduate Pilot (UPT)
Non-Pilot Aircrew
Officer
Enlisted
Specialty Training
Officer
Enlisted

Table 6. Personnel Acquisition and Training Elements